USSR   UDC 621.375.8

VORONIN, V. F., BRIBKOVSKIY, V. P., and SAMOYLYUKOVICH, V. A.

"Correlation Between Internal Differential Quantum Yield of Generation and Near Field Picture of Injection Lasers"

Abstract: The correlation of the near field picture with the differential internal quantum generation yield is experimentally established. In diodes made of the same material and having the same dimensions the more homogeneous the near field picture, the greater the quantum yield of generation. Tests were performed with a series of 22 GaAs diffusion diodes at liquid nitrogen temperature with generation excited by pulses of current 1 µsec in length with a pulse repeition frequency of 60 Hz.

1/1

Mining, Petroleum, Geological

BRICHKIN, A. V., GENBACH, A. N., PEREVERTUN, V. V., ROSLYAKOVA, T. V.

"Concerning the Mechanism of Thermal and Thermomechanical Methods of Rock Destruction"

Translation: It is noted that solid rocks are intensively destroyed by a heat flux (jet). In porous rocks with a strongly developed crack structure, destruction by the thermal method takes place slowly and unsteadily. In this case, combined heat and mechanical action on the rock is recommended. Indentation of a flat punch into a rock preheated by a flux is considered. Stresses in this case are determined as the sum of the stresses due to the heat alone and to the external load in the absence of heating. The paper presents the results of calculation of the pressure on the punch as a function of the heat flux for granite and teschenite. The products of thermomechanical destruction are particles with a size of the order of 0.1 cm. It is noted that there exists a definite relation between the thermal action,

1/2

USSR

BRICHKIN, A. V. et al., Nauch. tr. Kazakhsk. politekhn. in-t, Alma-Ata, 1971, pp 392-396

the mechanical load on the punch, and the size of the punch which give maximum productivity with minimum power expenditures. G. M. Lyakhov.

2/2

USSR

UDC: 622.011.43

RUDYAK, E. M., BRICHKIN, A. V.

"Mechanism of Thermal Destruction of Rocks Under Conditions of Brittle Splitting"

Nauch. tr. Kazakhsk. politekhn. in-t (Scientific Works. Kazakh Polytechnical Institute), Alma-Ata, 1971, pp 382-391 (from RZh-Mekhanika, No 5, May 72, Abstract No 5V585)

Translation: The authors calculate destruction of rocks with various physicomechanical and thermophysical properties under the effect of heat flux from a jet. Splitting stresses resulting in cracks parallel to the free surface arise at the point of action of the flux as a consequence of the difference in temperatures of the surface and deep-lying layers. The plate of rock over the crack is clamped around the perimeter. A bending moment is developed during thermal expansion. The relation between splitting and normal stresses is determined as well as the condition of crack formation and cleavage of the plate. The resultant equations are recommended for setting the minimum heat flux sufficient for splitting rock. G. M. Lyakhov.

1/1

USSR   UDC 621.791.011

BRIDAVSKIY, M. S., ZEMZIN, V. N., PIGROVA, G. D., and DEMYANTSEVICH, S. V.,
Leningrad

"Heat Resistance of Nickel-Base Weld Seams"

Abstract: Data on the effect of molybdenum and tungsten on the heat resis-
tance of nickel-base weld seams, suitable for long-time service at high
temperatures, are absent in the literature, and for this reason the present
investigation is devoted to determination of the optimum quantities of alloy-
ing elements from the view-point of long-time heat resistance and engineering
strength of a nickel-base weld seam. Thirteen compositions, containing a
varying amount of Mo (from 7 to 22%), including the compositions of IMET-10
and TsT-28 electrodes, were studied as well as compositions in which the nio-
bium content changed from 1 to 1.7%. The welded metals were given the
following designations: Khi5N60M7, Khi5N65M14V4 (TsT-28), Khi5N65M18,
Khi0N65M22 (IMET-10), Khi3N50B, Khi5N70B2, Khi5NB2, MZhO, MZh2, MZh3, MZh4,
MZh5, MZh8, Zh3, Zh6, and Zh8.
    A nickel-base seam metal with added Mo possesses higher strength and
better long-time strength than when alloyed with niobium. Optimum concen-
1/2

trations of Mo in the seam metal of the Ni-Cr-Mo system with 10-15% Cr
were 12-14%, which corresponds to its greatest solubility in the matrix.
Cause of embrittlement and lowering of long-time strength of the seam metal
alloyed with Mo is precipitation of the rich molybdenum mu-phase; intensive
formation of this phase is observed in the presence of iron and silicon and
for molybdenum in amounts exceeding the limit of its solubility in the matrix.
The mechanism of appearance of hot welding cracks in seams alloyed with Mo
in quantities of the lowest limit of its solubility and significantly
exceeding this quantity and limit were different. Five figures, 2
tables, 9 bibliographic references.

2/2

USSR

UDC: 621.317.799

MEL'NIK, B. V., MOROKOV, F. A., BRIDAVSKIY, V. L.

"A Waveguide Pickup for Checking Transmitted SHF Power"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 30, Oct 71, Author's Certificate No 317000, Division G, filed 7 Feb 70,
published 7 Oct 71, p 158

Translation: This Author's Certificate introduces a waveguide pickup for
checking transmitted SHF power. As a distinguishing feature of the patent,
the device is designed for checking low-level SHF power transmission in a
waveguide channel without using intermediate connecting elements. A semi-
conductor measurement thermistor is connected to the narrow wall of the
waveguide at the point where the electric component of the electromagnetic
field vanishes. Connection is made through narrow transverse slots in
the waveguide walls.

1/1

1/2   020   UNCLASSIFIED   PROCESSING DATE--09OCT70
TITLE--EFFECT OF HEAT TREATMENT OF SUGAR BEETS ON THE AMOUNT OF METHANOL
 IN THE UNDISTILLED ALCOHOL -U-
AUTHOR-(02)-BRIGADENKO, M.K., USTINNIKOV, B.A.

COUNTRY OF INFO--USSR

SOURCE--FERMENT. SPIRIT. PROM. 1970, 36(1), 15-17

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--AGRICULTURE CROP, FERMENTATION, SUCROSE, ETHYL ALCOHOL, METHYL
 ALCOHOL, DISTILLATION, THERMAL DECOMPOSITION, FOOD TECHNOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1986/1747   STEP NO--UR/0071/70/036/001/0015/0017

CIRC ACCESSION NO--AP0103511
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0103511

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANALYSES ARE PRESENTED FOR MASHES
AND FERMENTED MASH WORTS DERIVED FROM BEETS THE SUGAL LEVELS OF WHICH
WERE 17.1 AND 22.5PERCENT AND WHICH HAD BEEN TREATED AT 85-90, 115-20,
OR 135-40DEGREES. MEOH IS NOT ONLY A PRODUCT OF THE FERMENTATION BUT
ALSO A DECOMPN. PRODUCT FORMED BY THERMAL TREATMENT. DECOMPN. ACCOUNTS
FOR ABOUT 30-50PERCENT OF THE TOTAL MEOH. THERMAL TREATMENT OF BEETS
FOR MASH PRODUCTION SHOULD BE AT SMALLER THAN OR EQUAL TO 85-90DEGREES.

UNCLASSIFIED

USSR   UDC 681.325.07

BRIGADINOV, V. A., KOROBOV, N. N., PON'KIN, V. A.

"A Device for Measuring the Mean-Square Value of a Stationary
Centered Random Process"

Abstract: This Author's Certificate introduces a device for mea-
suring the mean-square value of a stationary centered random pro-
cess. The device contains an input unit, integrator, and regis-
tration and comparison units. As a distinguishing feature of
the patent, measurement precision is improved by connecting between
the input unit and the integrator a comparison unit and an ampli-
fier with variable gain which changes by a linear law.

1/1

USSR   UDC 539.3:534.1

BRIGADIROV, G. V., GORDON, V. A.

"Oscillations of Thin Plates of Materials With Different Moduli"

V sb. Materialy III Konferentsii po obmenu opytom v nauchn. issled. i
proyektir. osush. mestorozhd. polezn. iskopayemykh (Papers of the III
Conference on Exchange of Experience in Scientific Research and Planning
of Drainage for Mineral Deposits -- Collection of Works), Belgorod, 1969,
pp 209-216 (from RZh-Mekhanika, No 5, May 70, Abstract No 5V250)

Translation: Free axisymmetric oscillations of a circular plate of a material
of different moduli are studied for one form of the relationship between the
deformation rigidity and the deformation phase. The natural forms and fre-
quencies of the oscillations were obtained. Particular attention is given
to a study of radial oscillations. L. A. Tolokonnikov.

1/1

TITLE--LEUCO 1,4,5,8 TETRAHYDROXYANTHRAQUINONE -U-

AUTHOR-(05)-BELKIN, I.O., BRIGIDER, YU.Z., MASLOSH, V.Z., SANKO, L.G.,
   POTIRAY, R.YE.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 266,777

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL PATENT, CHEMICAL SYNTHESIS, ANTHRAQUINONE, NITRATION,
   HYDROXYL RADICAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1904/1310   STEP NO--UR/0412/70/000/000/0000/0000

CIRC ACCESSION NO--AA0132078
                    UNCLASSIFIED

UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LEUCO 1,4,5,8
    TETRAHYDROXYANTHRAQUINONE (I) WAS PREPD. FROM 1,8 DIHYDROXYANTHRAQUINONE
    BY NITRATION, REDN. OF THE RESULTANT NITRO DERIV. WITH NA SUB2 S IN THE
    PRESENCE OF NA SUB2 S SUB2 O SUB4.2H SUB2 O, FILTRATION, RINSING,
    HYDROLYSIS IN THE PRESENCE OF AQ. NAOH AND NA SUB2 S SUB2 O SUB4.2H SUB2
    O, AND SEPN. OF I.

UNCLASSIFIED

USSR

BRIGMANE, A. Ye.

"Covariation Analysis in the Case of Several Factor Characteristics and One Qualitative Variable"

Mat. Metody v Ekon. [Mathematical Methods in Economics -- Collection of Works], No 10, Riga, Zinatne Press, 1973, pp 97-118 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V278).

Translation: A method is presented for covariation analysis for construction of harvest production functions on the basis of multiannual data from several farms.

1/1

'ISSR

UDC 621.762.002.5(088.8)

BATRAKOV, P. D., BULANOV, A. A., BRIK, A. G., and KARTASHOV, A. I.

"Device for Mixing Viscous and Powdered Materials"

Translation: The device contains rotating shafts contacting cylindrical
surfaces with cleaning scrubbers, mounted on a common support. In order
to increase the product quality by repeated mixing, both shafts are
connected to a cylindrical rotating drum with blades on the outside of
the drum, articulated at the ends of the drum and connected by levers
with rollers in a shaped slot in an end feeler installed on the support.
The upper portion of the device carries a scraper in order to clean the
blades of material accumulating on them, while the feeler is made in
this area so that the entire working surface of the blade contacts the
edge of the scrubber as it moves.

1/1

Organophosphorus Compounds

USSR

UDC: 577.153

BRESTKIN, A. P., BRIK, I. L., VOLKOVA, R. I., MAYZEL', YE. B. and ROZENGARD, YE. V., Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, Academy of Sciences USSR, Leningrad

"Effects of the Ionic Strength and Organic Solvents on the Interaction of Cholinesterases with Substrates and Organophosphorus Inhibitors"

Moscow, Biokhimiya, Vol 35, No 2, Mar-Apr 70, pp 382-393

Abstract: The effect of various concentrations of KCl on the reactivity of acetylcholinesterase (A) from bovine erythrocytes and butyrylcholinesterase (B) from equine blood serum with respect to two substrates, acetylcholine and phenyl acetate, and two organophosphorus inhibitors, $C_2H_5(CH_3)P(O)SC_2H_4SC_2H_5$ (Gd-7) and $C_2H_5O(CH_3)P(O)SC_2H_4 S^+(CH_3)C_2H_5 \cdot CH_3^-$ (Gd-42), was studied. With increasing concentrations of KCl, the reactivity of A and B decreased towards the cationic substrate acetylcholine and Gd-42 because of a decrease in the Coulomb interaction with the anionic center of the enzymes, whereas it increased towards the non-cationic substrate PhOAc and Gd-7 because of an increase in hydrophobic interaction with the hydrophobic sections of the active surface of the enzymes. In the acidic

1/3

USSR

BRESTKIN, A. P., et al, Biokhimiya, Vol 35, No 2, Mar-Apr 70, pp 382-393

pH range, in which ionization of the anionic center was depressed, the inhibiting effect of KCl on the rate of the reaction of A and B with Gd-42 was less pronounced. Changes in the effect of the ionic strength at pH 5.5-8.2 on the inhibiting action of Gd-42 towards A and B made it possible to estimate the pK of the anionic center of A and B at 6.1 and 6.8, respectively. The effects of C_2H_5OH, C_3H_7OH, iso-C_3H_7OH, C_4H_9OH, iso-C_4H_9OH, sec-C_4H_9OH, and tert-C_4H_9OH on the anticholinesterase activity of organophosphorus inhibitors $C_2H_5O(CH_3)P(O)S(CH_2)_nC(CH_3)_3$ (series LG) and $C_2H_{2n+1}O(CH_3)P(O)SC_4H_9$ (series GA) were studied in experiments with B. The alcohols reduced the anticholinesterase activity of the organophosphorus compounds by worsening their hydrophobic interaction with the non-polar sections of B and also by altering the structure of these sections. The hydrophobic section in the region of the esterase center of B was more resistant to the action of alcohols than that in the region of the anionic center. The maximum effect in reducing the activity in the series LG was produced by iso-C_4H_9OH, to which hydrophobic regions in the region of the anionic center are particularly sensitive, while the maximum

2/3

- 39 -

USSR

BRESTKIN, A. P., et al, Biokhimiya, Vol 35, No 2, Mar-Apr 70, pp 382-393

effect in reducing activity in the series GA was exerted by tert-C_4H_9OH, which affects primarily the region of the esterase center.

3/3

USSR   UDC 548.52

BRIK, V. B., BYKHOVSKIY, A. I., LARIKOV, L. N., and FAL'CHENKO, V. M.

"The Effect of the Geometry of Growth of a-Sn Crystals on the Kinetics of Transformation of White Tin Into Gray"

Kiev, Metallofizika, No 32, 1970, pp 113-118

Translation: The general kinetics of the $\beta \to \alpha$ transformation of the high-purity OVCh-000 (99.9995%) tin on specimens of various forms, i.e., massive in the form of small cubes, plates, and wire, was investigated by the method of hydrostatic weighing.

The overall rate of the polymorphic $\infty \to \alpha$ transformation adheres to Avrami's equation
$$X = 1 - \exp(-At^k),$$
where X is the share of the transformed volume; A and k are the constants. At the same time, k depending on the form of specimens assumes various values: 2.3-2.7 for massive specimens, 1.5-2 for specimens in the form of plates, and 1 for the specimens in the form of wire of a diameter less than 0.8 mm.
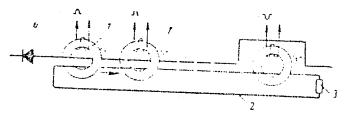
1/1

AA0043379

Soviet Inventions Illustrated, Section II Electrical, Derwent,

UR 0482

242970 MEMORY SYSTEM is constructed on transformers with direct lines passing through them. Output pulses of "0" and "I" can be obtained with different polarity. This is achieved by introducing an additional line (2) which passes through transformers and is terminated by resistor (3). When interrogating by applying current through one of the lines (4) then into the line (2) is induced current which changes state of "I" cores. In the zero cores it changes their polarity to the opposite to these of the unity cores.

1.2.65 as 942491/18-24.E.A.BRIK.(17.9.69)Bul 16/ 5.5.69. Class 21a. Int.Cl.G11c.

19761648

1/2   014   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--CATALYTIC SYSTEM FOR HYDROGENATION OF UNSATURATED ALDEHYDES -U-

AUTHOR-(05)-KHIDEKEL, M.L., BAKHANOVA, E.N., ASTAKHOVA, A.S.,
   BRIKENSHTEYN, KH.A., SAVCHENKO, V.I.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 164,352.
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970, 47(9)
DATE PUBLISHED--03MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--METAL CATALYST, ORGANIC PHOSPHORUS COMPOUND, CHEMICAL PATENT,
   HYDROGENATION, ALDEHYDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0829   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0136263
                    UNCLASSIFIED

CIRC ACCESSION NO--AA0136263   UNCLASSIFIED   PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE CATALYTIC SYSTEM CONTAINS A CATALYST, AN VIII GROUP METAL, AND AN ACTIVATING ADDITIVE. PHOSPHINES OF FORMULA R PRIME1 SUBN R PRIME2 SUMMNEGATIVE P, WHERE N EQUALS 0-3, M EQUALS 0-3, AND R PRIME1 AND R PRIME2 ARE ALKYL OR ARYL RADICALS, ARE USED AS THE ACTIVATING ADDITIVE.   FACILITY: FILIAL ORDENA LENINA INSTITUTA KHIMICHESKOY FIZIKA AN SSSR.

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--30OCT...

TITLE--PREPARATION OF UNSATURATED ALCOHOLS BY THE HYDROGENATION OF ALPHA,BETA UNSATURATED ALDEHYDES IN THE PRESENCE OF AN IRIDIUM CATALYST

AUTHOR-(05)-KHIDEKEL, M.L., BAKHANOVA, E.N., ASTAKHOVA, A.S., BRIKENSHTEYN, KH.A., SAVCHENKO, V.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (2), 499

DATE PUBLISHED------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--HYDROGENATION, IRIDIUM, CATALYST, ALDEHYDE, FURAN, BENZENE DERIVATIVE, ALCOHOL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0625   STEP NO--UR/0062/70/000/002/0499/0499

CIRC ACCESSION NO--AP0119537

UNCLASSIFIED

CIRC ACCESSION NO--AP0119537   UNCLASSIFIED   PROCESSING DATE--30OCT70
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   IN THE PRESENCE OF IR CATALYST,
   UNSATD. ALDEHYDES, SUCH AS CH SUB2.   CHCHO, MECH:CHCHO, PHCH:CHCHO, AND
   FURYLACROLEIN, ARE HYDROGENATED TO UNSATD. ALCS. IN 70-100PERCENT
   YIELDS.   THE REACTION IS RUN AT NORMAL PRESSURE AND ROOM TEMP.   THUS, 3
   MILLIMOLES PHCH:CHCHO IN 10 ML 96PERCENT ETOH WITH 0.5 G 5PERCENT IR-C
   GAVE AFTER UPTAKE OF 1 MOLAR EQUIV. H, 100PERCENT PHCH:CHCH SUB2 OH.   A
   2ND MOLE H WAS TAKEN UP AT A MUCH REDUCED RATE.   THE CATALYST MAY BE
   REUSED REPEATEDLY.   FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

TITLE--ALUMINUM POLYOLEFIN COMPOUNDS -U-

AUTHOR-(05)-CHIRKOV, N.M., BEYKHOLD, G.A., BRIKENSHTEYN, KH.M., KANASHKIN,
   YU.F., MATKOVSKIY, P.YE.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 264,692
REFERENCE--OTKRYTIYA, IZOBRET., PROM OBRAZTSY, TOVARNYE ZNAKI, 1970 47(9),
DATE PUBLISHED--03MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL PATENT, ALUMINUM, POLYOLEFIN RESIN, POLYMERIZATION,
   ETHYLENE, METAL CONTAINING POLYMER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0848   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0136282
                          UNCLASSIFIED

CIRC ACCESSION NO--AA0136282
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AL, POLYOLEFIN COMPDS. ARE PREPD.
BY POLYMN. OR COPOLYMN. OF C SUB2 H SUB4 WITH OTHER ALPHA, OLEFINS IN AN
INERT HYDROCARBON SOLVENT IN THE PRESENCE OF AL OR ITS ALLOYS (E.G., IN
THE FORM OF POWDER, FLAKES, WIRE, AND SHAVINGS) AND A CATALYST. THE
CATALYSTS USED ARE TRANSITION, METAL HALIDES OR HYDROXYHALIDES SOL. IN
HYDROCARBONS, E.G. V HYDROXYCHLORIDE.   FACILITY: FILIAL
INSTITUTA KHIMICHESKOY FIZIKI AN SSSR.

UNCLASSIFIED

1/2   033   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--QUANTUM YIELD OF THE PHOTOEFFECT IN LAYERS OF DYES -U-

AUTHOR--BRIKENSHTEYN, V.KH.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(1), 122-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS, PHYSICS

TOPIC TAGS--PHOTOEFFECT, DYE, PHTHALOCYANINE, ULTRAHIGH FREQUENCY,
  PHOTOCONDUCTIVITY, IR PHOTOCONDUCTOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/0011   STEP NO--UR/0020/70/191/001/0122/0125

CIRC ACCESSION NO--AT0117310
                          UNCLASSIFIED

CIRC ACCESSION NO--AT0117310
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MECHANISM OF THE PHOTOEFFECT
TAKING PLACE IN PHTHALOCYANINES WAS STUDIES FOR DYE LAYERS OF VERIOUS
CLASSES. FOR THIS PURPOSE THE PHOTOCOND. IN ULTRAHIGH FREQUENCY FIELDS
WAS MEASURED, THUS AVOIDING THE EFFECT OF INTERCRYST. BARRIERS ON THE
CHARACTERISTICS OF THE PHOTOEFFECT, BECAUSE THE DRIFT SHIFT OF THE
CHARGE CARRIES DURING A FIELD PERIOD WAS CONSIDERABLY LESS THAN THE SIZE
OF THE INHOMOGENEITIES OF THE POLYCRYST. SAMPLES. THE PARALLEL STUDY OF
THE PHOTOCOND. OF TRIPHENYLMETHANE DYES IN CONST. AND ULTRAHIGH
FREQUENCY FIELDS SHOWED THAT IN THE 1ST CASE THE CHARACTERISTICS OF THE
PHOTOCURRENT WERE DETD. BY INTERCRYST. BARRIERS. IN AN ULTRAHIGH
FREQUENCY FIELD WITH PULSED ILLUMINATION THE PHOTOCOND. OF THE CRYST.
REGIONS COULD BE MEASURED. THE LAYERS WERE PLACED INTO A RESONATOR
(LAMBDA EQUALS 3.2 CM), ILLUMINATED WITH PULSES OF LIGHT, AND THE CHANGE
IN THE IMAGINARY PART OF THE DIELEC. CONST. CAUSED BY THE FORMATION OF
CHARGE CARRIERS WAS RECORDED. ELECTRON ACCEPTORS LEAD TO THE APPEARANCE
OF A NEW ACTIVATIONLESS GENERATION OF CHARGE CARRIERS, THE EFFICIENCY OF
WHICH WAS HIGHER THAN IN VACUUM. THIS MICROSCOPIC MOBILITY IS PROBABLY
NOT INCREASED IF THE ACCEPTOR MOLS. ARE INTRODUCED INTO THE DYE LATTICE.
  IT CAN BE ASSUMED THAT IN THE PHTHALOCYANINE LAYERS THE QUANTUM YIELD
OF THE PHOTOEFFECT IS INCREASED AND THAT THE MECHANISM OF CHARGE CARRIER
GENERATION IS GENERAL FOR A WIDE RANGE OF ORG. PHOTOCONDUCTORS THAT ARE
SENSITIVE IN THE VISIBLE AND NEAR IR REGION OF THE SPECTRUM.
FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

USSR   UDC: 51

BOL'SHAKOV, I. A., BRIKKER, V. I.

"The 'Quasidiagonal' Problem of Quadratic Integer Programming"

Moscow, Mat. metody resheniya ekon. zadach--sbornik (Mathematical Methods
of Solving Economics Problems--collection of works), No 3, "Nauka", 1972,
pp 137-145 (from RZh-Kibernetika, No 5, May 73, abstract No 5V655 by
Yu. Finkel'shteyn)

Translation: The paper discusses the problem of minimizing the quadratic
form on an integer lattice

$$f(n) = (\tilde{n} - n)^T \Phi (\tilde{n} - n) \to \min. \qquad (I)$$

Here $\Phi = (\Phi_{ij})$, $i, j = 1, ..., p$. is a given positive definite symmetric matrix;
$\tilde{n} = (\tilde{n}_i), i = 1, ..., p$ is a given vector of coefficients, which in the general case
are integers; $n = (n_i), i = 1, ..., p$ is the sought integer vector, $n_i = 0, 1, 2, ...$.
An example is given of economic interpretation of the given problem.
Three methods of minimizing quadratic form (1) are considered, the first
of which is based on the principle of dynamic programming, the second --
on using the properties of local minima, and the third is a combination

1/2

USSR

BOL'SHAKOV, T. A., BRIKKER, V. I., Mat. metody resheniya ekon. zadach, No 3, "Nauka", 1975, pp 137-145

of the first two. The proposed methods, while not universal, are a vast improvement over simple trial and error when the matrix Φ in quasidiagonal, i. e.

$$\Phi_{ij} = 0 \text{ и } |i - j_i| > m,\qquad (2)$$

where m is some small integer, $1 < \underline{m} < p$. A numerical example is considered.

2/2

USSR UDC 911.3.616.981.455(571.12) 1.

DUNAYEVA, T. N., DOBROKHOTOV, B. P., VORONTSOVA, T. A., BRIKMAN, D. I., and KOVALEVSKIY, Yu. V.

"An Attempt to Define the Distribution of Tularemia in Northern Rayons of Tyumenskaya Oblast"

Translation: Zoological, parasitological, bacteriological, and epidemiological research conducted during 1967 field trips provide evidence about the wide distribution of tularemia in the northern rayons of Tyumenskaya Oblast, all the way to shore areas of the mouth of the Ob River, the foothills of the polar Urals, and the Pur River basin. According to the high percentage of natural immunity among the local population, one can judge the significant level of epidemiological activity of the foci. A discussion is presented of the reasons for the non-correlation of skin allergy test results with tularemia incidence, and the reaction of agglutination with blood serum in the population of the North. Tularemia was first established among reindeer.

1/1

USSR   UDC 576.851.45.095.18:547.932.133

BRIKMAN, D. I., Irkutsk Scientific Research Antiplague Institute of Siberia
and the Far East

"The Lytic Effect of Sodium Desoxycholate on Tularemia Pathogens"

Abstract: The ability of 0.05-1% sodium desoxycholate solutions to lyse
various tularemia pathogens was investigated -- Gayskiy's vaccine strain No 15,
the virulent American Schu and BH-8859 strains, strain No 777 (200 passages),
and the nonvirulent strain No 32/400. Changes in the optical density of the
culture suspension (which occurred after addition of 1 ml of the reagent to
1 ml of the suspension) served as the index of lysis. Sodium desoxycholate
concentrations of 0.05% and 0.25% yielded minimum and maximum clearance of
optical density. However, destruction of cells was never complete, because
the clear liquid gave rise to culture growth on agar. The antigen released
into solution was precipitated by tularemia sera. Evidence indicates that
this was the Vi-antigen of F. tularensis, which is absent in nonvirulent
strains and which is present in virulent strains in a greater concentration
than in vaccine strains. Upon epidermal application to infected rabbits,
lysate, of virulent and vaccine strains produced allergenic skin reactions.
1/1

USSR

BRIKMAN, L. I., TSETLIN, V. M., ROGINSKAYA, YE. YA., ZHUK, YE. B., KLIMEN-
CHUK, V. I., POZHARSKAYA, YE. B., and VOLKOVA, A. P.

"Composition for the Control of Household Insects Specifically for Cock-
roaches and Bugs"

USSR Author's Certificate No 251515, filed 1 Dec 70, published 10 Oct 72
(from RZh-Khimiya, No 19, Oct 73, Abstract No 19N495 P)

Translation: To lower the toxicity of the preparation towards warm-blooded
animals without lowering its effectiveness against household insects, pyre-
thrins are added to the arosol preparation containing γ-GKhTsG $\boxed{}$ hexachloro-
cyclohexane -- HCCH $\boxed{}$. The composition of such a preparation: γ-HCCH 0.21%,
DDT 1.89%, pyrethrin extract containing $\geqslant$ 25% of the active material 0.42%,
xylene 5.0%, a mixture of freon-12 and freon-11 55%, kerosene up to 100%.

1/1

- 59 -

USSR

UDC 632.95

BRIKMAN, L. I., TSETLIN, V. M., ROGINSKAYA, Ye. Ya., ZHUK, Ye. B., VOLKOVA, A. P., VORONKINA, T. M., KLIMENCHUK, V. I., POZHARSKAY'., Ye, B.

"Compound for Controlling Household Insects"

USSR Author's Certificate No 340384, filed 15 Feb 71, published 23 Jun 72 (from RZH-Khimiya, No 2 (II), Feb 73, Abstract No 2N486)

Translation: The compound for controlling cockroaches, clones and moths contains the following (in % by weight): γ-hexachlorocyclohexane 0.19%; DDT 1.71%; DDVF 0.6%; xylol 5%; a mixture of CF_2Cl_2(freon-12) and $CFCl_3$ (freon-1I) 55% and kerosene to 100%.

1/1

USSR   UDC 517.933

BRIKMAN, M. S.

"Method for Determining the Coefficients for the Differential Equation of a Linear Nonstationary System"

V sb. Metody i sredstva tekhn. kibernet. (Methods and Means of Technical Cybernetics -- Collection of Works), No. 10, Riga, 1970, pp 73-79 (from RZh-Matematika, No 4, Apr 71, Abstract No 4B340)

Translation: The problem of determining the coefficients of the equation

$$\sum_{i=0}^{n} a_i(t)\, y^{(i)} = \sum_{j=0}^{m} b_j(t)\, x^{(j)}, \quad m < n,$$

is discussed on the basis of a known action at the input $x(t)$, a reaction $y(t)$, and their derivatives $x'(t),\ldots,x^{(m)}(t)$, $y'(t),\ldots,y^{(n)}(t)$ for $t_0 \leq t \leq T$. Authors abstract.

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- 5 -

USSR   UDC 519.21

BRIKMAN, M. S. and KRISTINKOV, D. S.

"Canonical Expansion of Almost-Periodic Random Functions"

Translation: With reference to recent computer processing of their results,
the authors describe and analyze formulas of the canonical (in the V. S.
Pugachyov sense) expansion of random function $X(t)$ for which $M \left| X(t + \tau) - X(t) \right|^2 \leq \varepsilon^2$ for all $|t| \leq N$.

1/1

DOVGIY, YA. O., BILYY, YA. M., BRILINSKIY, M. I., GNYP, R. G., DMYTRUK, V. I., SIMKIN, YU. YE.

"Effect of Fiberglass on the Contrast-Frequency Characteristics of Optical Systems"

Abstract: The quality of the image formed by an optical system is determined by its contrast-frequencyccharacteristic or the contrast transmission function $T(N)$. If during transformation of the optical signals their relative intensity (contrast) does not change it is possible to write the equation [F. Perren, Usp. Fiz. Nauk, No 78, 307, 1962]:

$$T_{syst.}(N) = \Pi T_i (N)$$

$(T_i(N)$ is the contrast-frequency characteristic of the i-th element of the system, N is the spatial frequency). A study was made to determine how fiberglass affects the contrast-frequency characteristic of the system. The fiberglass introduces a contrast distortion and violates the above relation. The degree of the distortions depends on the relations of the fiberglass apertures and the other system elements. The conditions most acceptable for measuring the contrast-frequency characteristics of the fiberglass are as follows:

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· USSR

DOVGIY, YA. O., et al., Optika i Spektroskopiya Vol XXXIV, No 4, 1973, pp 789-791

illumination by a collimated beam of uniform cross section using any receiving objective or diffuse illumination jointly with a narrow-aperture objective $(A_{ob} \leq A_{fiberglass})$.

2/2

- 71 -

USSR

UDC 666.189.212:535.818.7

DOVGIY, YA.O., BILYY, YA.M., BRILINSKIY, M.I., GNYP, R.G., DMYTRUK, V.P.,
SIMKIN, YU.YE., STEFANSKIY, I.V. [L'vov State University imeni Ivan Franko]

"Frequency-Contrast Characteristics And Noise Of Fiber Optic Cathodoluminescence Screens"

Abstract: Measurements were made of the frequency-contrast characteristics
(FCC) and noise of fiber optic cathodoluminescence screens during their excitat-
ion by a static electron beam. The measurements were made by methods developed
for measuring the FCC and noise of cathodoluminescence screens with a glass sub-
strate. The principal scheme of the device used for measuring FCC is described
and a comparison is made of FCC measured by the micrometric method and with
electron excitation. The additive contribution of the glass fiber substrate to
the noise characteristics of the screen is shown. 3 ill. 4 ref.

1/1

- 210 -

USSR

UDC: $[537.226 + 537.311.33] : [537 + 535]$

DOVGIY, Ya. O., BRILINS'KIY, M. I., and KOROLISHIN, V. M.

"Polarization Shift of the Absorption Edge in α-HgS"

Translation: At temperatures of 300 and 80° K, the polarization shift of the natural absorption edge for α-HgS monocrystals cut parallel to the c-axis was measured. On the basis of theoretical and group analysis, a possible variant of the zonal system of α-HgS is presented and the rules of selection for zone-zone transitions at point Γ of the Brillouin zone are defined. The amount of the polarization shift then corresponds to the energy gap between the valence subzones Γ_4 and $\{\Gamma_5 + \Gamma_6\}$ arising as a result of the spin-orbital interaction. It is expected, from the selection rules, that the optically active absorption band in the infrared region of the spectrum can be observed only when $\vec{E} \perp c$. Author's abstract

1/1

USSR

BRILLIANT, M. D., YELIMELEKH, I. M.

"Pneumatic Keyboard of a Typesetting Program Computer"

Translation: This article contains a description of a typesetting program
computer used to prepare a program for controlling a typesetting machine.
The schematic diagram of the pneumatic equipment is presented. The pneumatic
keyboards have been tested and can find application in keyboard devices of
typesetting program systems: for example, in computers, control panels, and
so on. There are three illustrations.

1/1

USSR   UDC: 621.373.431.2:621.382.3

BRILLIANTOV, D. P.

"On Power Losses in a Transistorized Line-Scanning Oscillator"

V sb. Poluprovodn. pribory v tekhn. elektrosvyazi (Semiconductor Devices
in Electrical Communications Technology--collection of works), vyp. 7,
Moscow, "Svyaz'", 1971, pp 125-132 (from RZh-Radiotekhnika, No 6, Jun 71,
Abstract No 6G165)

Translation: A study is made of power losses in a line-scanning oscillator
due to factors such as inertia of saturation resistance, singularities of
the input and output current-voltage characteristics of the power transistor
in the output stage, and also the parameters of the damper diode. The
necessary computational relationships are derived for determining losses
and ways to improve oscillator economy. Two illustrations, bibliography
of four titles. Resumé.

1/1

Materials

USSR   UDC 621.382.002

BRILLIANTOV, E. I., and KASLUZOV, I. I.
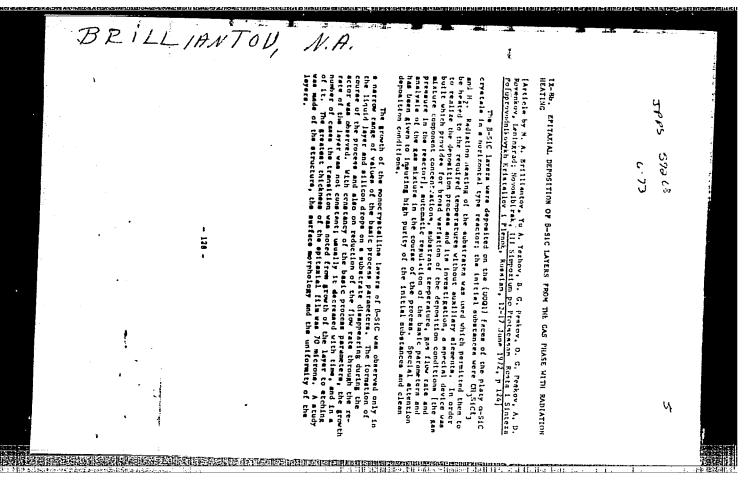
"Etchant for Processing Semiconductor Surfaces"

USSR Author's Certificate No 232003, filed 11 Aug 67, published 24
Apr 69 (from RZh-Elektronika i yeye primeneniye, No 1, Jan 70,
Abstract No 1B280P)

Translation: Etchant solution for processing the surface of semi-
conductors, e.g., indium antimonide, on the basis of tartaric acid
and hydrogen peroxide is patented. To increase the rate and to improve
the quality of etching, nitric and fluoric acids are introduced into
the solution with the following relationship of components (in percent
by volume): tartaric acid (26-27%)-20; hydrogen peroxide (30%)-7;
nitric acid (65%)-1; fluoric acid (40%)-1.

1/1

BRILLIANTOV, N.A.

JPRS 59068
c.73

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- 120 -

IX-8b. EPITAXIAL DEPOSITION OF β-SIC LAYERS FROM THE GAS PHASE WITH RADIATION HEATING

The β-SiC layers were deposited on the (0001) faces of the platy α-SiC crystals in a horizontal type reactor; the initial substances were CH_3SiCl_3 and H_2. Radiation heating of the substrates was used which permitted then to be heated to the required temperatures without auxiliary elements. In order to realize the deposition process and its investigation, a special device was built which provides for broad variation of the deposition conditions [the gas mixture component concentrations, substrate temperature, gas flow rate and pressure in the reactor], automatic regulation of the basic parameters and analysis of the gas mixture in the course of the process. Special attention has been given to ignuring high purity of the initial substances and clean deposition conditions.

The growth of the monocrystalline layers of β-SiC was observed only in a narrow range of values of the basic process parameters. The formation of the liquid layer and silicon drops on a substrate disappearing during the course of the process and also on reduction of the flow rate through the reactor was observed. With constancy of the basic process parameters, the growth rate of the layer was not constant; usually it decreased with time, and in a number of cases the transition was noted from growth of the layer to etching of it. The greatest thickness of the epitaxial film was 70 microns. A study was made of the structure, the surface morphology and the uniformity of the

USSR

BRIN, M. I. and RYCHKOVA, T. S.

"One Lag Model of the Realization of Capital Investments"

Ekonomika i Mat. Metody [Economics and Mathematical Methods], 1973,
9, No 3, pp 446-450 (Translated from Referativnyy Zhurnal Kibernetika,
No 9, 1973, Abstract No 9V308)

Translation: Economic processes related to the realization of capital
investments can be described by equations with delay of the form

$$y_t = p_0 x_t + p_1 x_{t-1} + \cdots + p_m x_{t-m},$$

where y_t is the investment of fixed production funds during year t,
while x_t are the capital investments during the same year. This article
studies the estimation of parameters of these equations using the method
of least squares in cases when the coefficients p_k can be represented in
the form of first or second power polynomials of k.   V. Kolchin

1/1

USSR   UDC 621.791:620.178.3.004.64

KUDRYAVTSEV, I. V., Doctor of Technical Sciences, BRINBERG, I. L., Candidate of Technical Sciences, and ANDRENKO, V. M., Engineer

"Influence of Technology of Attachment of Plates and Repair of Defects on the Fatigue Strength of 16GNMA Steel"

Abstract: A study was made to determine the fatigue resistance of boiler steel in connection with the varying technologies of welding of separation elements and correction of defects on the internal walls of the high-parameter drums and boilers. The steel tested had the following chemical composition: 0.17% C, 1.04% Mn, 0.36% Si, 0.05% Cr, 1.1% Ni, 0.47% Mo, 0.16% Cu, 0.05% V, 0.012% P, and 0.013% S. Fatigue resistance was determined using specimens imitating the welding of separator elements and repair of cracks. It was determined that the attachment of plates to 115-mm-thick specimens decreases their fatigue strength by 50% in comparison with smooth specimens. The method of welding the plates (one-sided or two-sided) has no marked effect on fatigue strength. Cracks are easier to locate when two-sided welding is used. Points where cracks
1/2

USSR

KUDRYAVTSEV, I., V., et al, Svarochnoye Proizvodstvo, No 10, Oct 70, pp
22-24

are repaired cause no decrease in fatigue resistance if carefully finished.
The fatigue resistance of 50-mm-thick specimens with unrepaired dents is
83% of the endurance limit of smooth specimens. The fatigue resistance
of specimens with dents hardened by stamping is close to the fatigue re-
sistance of smooth specimens.

2/2

- 75 -

REEL # 4

BERTINOV, A.I.
to
BRINBERG, I.L.